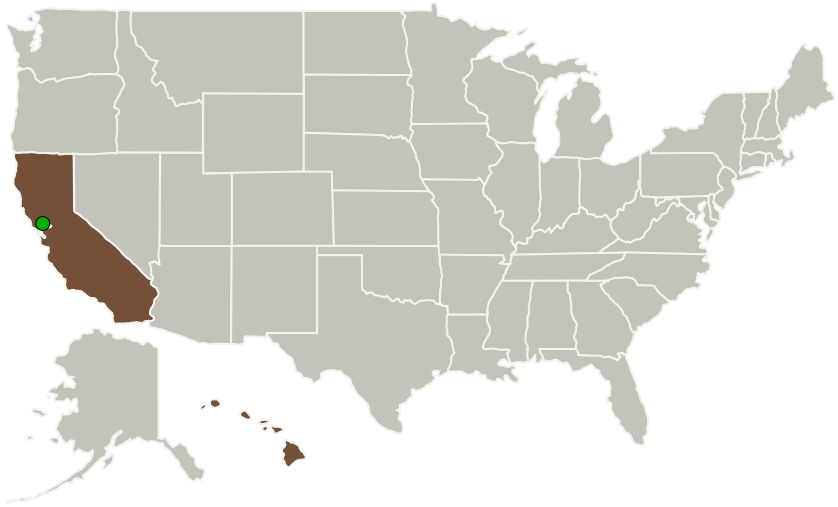
Transported Turbulence during Climb, Cruise and Descent, Phase I

Completed Technology Project (2015 - 2015)

Project Introduction

We address Clear Air Turbulence events which are not identified by the current CAT prediction formulation and commercial products in an effort to reduce damage and injury encountered during long-range commercial flights over oceanic areas. Such events are not uncommon, and occur in areas that are free of clouds, are not located near jet stream/upper frontal shear zones associated with the Ellrod-Knox diagnostic index, and are at large distances from possible "near-cloud" turbulence associated with convective storms. A Transported Turbulence Product (TTP) is proposed which follows the forensic analysis procedures used to evaluate potential causes for such encounters during CAT incident investigations. Should our proposed method prove viable, dispatchers will be able to warn pilots prior to entry into high probability areas for such Transported Turbulence. The timely warnings will allow material and personnel in the cabin to be secured during transit.

Primary U.S. Work Locations and Key Partners



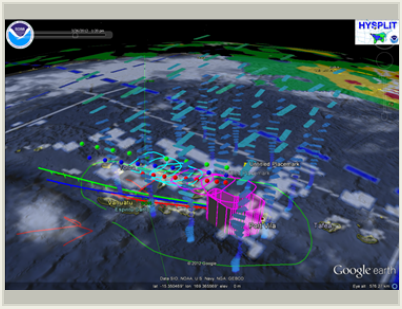


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Table of Contents

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Organizations Performing Work	Role	Type	Location
WxOps, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB), Veteran-Owned Small Business (VOSB)	Honolulu, Hawaii
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Hawaii

Project Transitions

June 2015: Project Start

December 2015: Closed out

Closeout Summary: Transported Turbulence during Climb, Cruise and Descen t, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/140778)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

WxOps, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

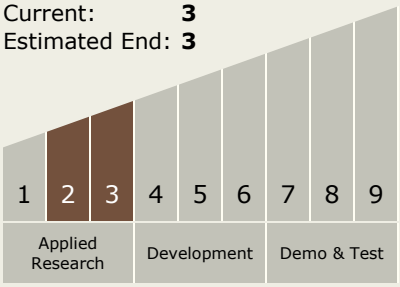
Carlos Torrez

Principal Investigator:

Gary P Ellrod

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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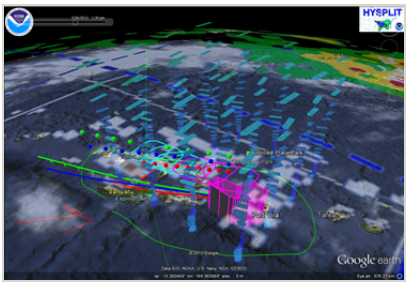
Images



Briefing Chart Image
Transported Turbulence during Climb, Cruise and Descent, Phase I *(https://techport.nasa.gov/image/134845)*

Technology Areas

Primary:

- TX15 Flight Vehicle Systems
  - TX15.1 Aerosciences
    - TX15.1.7 Computational Fluid Dynamics (CFD) Technologies

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System